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| TENSORCOMM, INC. 1490 W. 121ST AVE., SUITE 202 WESTMINISTER, CO 80234 | | | EXAMINER MALEK, LEILA | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/699,360

Applicant(s)

OLSON ET AL.

Examiner

Leila Malek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12-21, 24-29 and 32 is/are rejected.
- 7) ☒ Claim(s) 10, 11, 22, 23, 30 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/13/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 7, filed on 05/08/2007, with respect to the rejection(s) of claim(s) 1-4, 6, 7, 16, 17, 19, 24-26, 27, and 29 under Zehavi in view of Madhow have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 32 is rejected under 35 U.S.C. 102(b) as being anticipated by Madhow et al. (hereafter, referred as Madhow) (US 6,175,587).

As to claim 32, Madhow discloses a processing engine 400 (see Figs. 3 and 4) configured for generating a matrix of one or more vectors based on determined codes (column 6, lines 66-67, column 7, lines 1- 5, 16-37, column 8, lines 10-13), wherein each element of the vectors comprises a component of the determined codes (column 9, lines 31-67, column 10, lines 1-6) and an application unit (see e.g. unit 216) communicatively coupled to the matrix generator (see column 7, lines 29-37) and configured for using the matrix to selectively substantially cancel one or more of a

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plurality of signals (column 6, lines 65-67, column 7, lines 29-65, column 8, lines 40-49, column 9, lines 17-26, 31-67, column 10, lines 1-6, 8-13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-9, 16-21, and 24-29, are rejected under 35 U.S.C. 103(a) as being unpatentable over Klein et al. (hereafter, referred as Klein) (US 2004/0132443), in view of Madhow.

As to claim 1, Klein discloses a receiver comprising a demodulator unit configured for determining a code from each of a plurality of signals and for demodulating one or more of the plurality of signals (see paragraphs 0001-0002). Klein discloses all the subject matters claimed in claim 1, except for a processing engine communicatively coupled to the demodulator unit and configured for generating a matrix of one or more vectors based on determined codes, wherein each element of the vectors comprises a component of the determined codes and wherein the matrix is used to selectively substantially reduce energy from one or more of the signals. Madhow, in the same field of endeavor, discloses a processing engine 400 (see Figs. 3 and 4) communicatively coupled to the demodulator unit (Fig. 2 (220)) and configured for generating a matrix of one or more vectors based on determined codes (column 6, lines 66-67, column 7, lines 1- 5, 16-37, column 8, lines 10-13), wherein each element of the

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vectors comprises a component of the determined codes (column 9, lines 31-67, column 10, lines 1-6) and wherein the matrix is used to selectively substantially reduce energy from one or more of the signals (column 6, lines 65-67, column 7, lines 29-65, column 8, lines 40-49, column 9, lines 17-26, 31-67, column 10, lines 1-6, 8-13). Therefore it would have been obvious to one of ordinary skill in the art to modify Klein as suggested by Madhow, in order to implement interference suppression adaptively (Madhow, column 2, lines 51-55) and improve the interference cancellation process (see column 2, lines 56-57).

As to claims 16 and 24, Klein discloses a receiver comprising a demodulator unit configured for determining a code from each of a plurality of signals and for demodulating one or more of the plurality of signals (see paragraphs 0001-0002). Klein discloses all the subject matters claimed in claims 16, and 24, except for generating a matrix of one or more vectors based on determined codes, wherein each element of the vectors comprises a component of the determined codes; and using the matrix to selectively substantially reduce energy from one or more of the signals thereby reducing interference. Madhow, in the same field of endeavor, discloses a processing engine 400 (see Figs. 3 and 4) communicatively coupled to the demodulator unit (Fig. 2 (220)) and configured for generating a matrix of one or more vectors based on determined codes (column 7, lines 1- 5, 16-37, column 8, lines 10-13), wherein each element of the vectors comprises a component of the determined codes (column 9, lines 31-67, column 10, lines 1-6) and wherein the matrix is used to selectively substantially reduce energy from one or more of the signals (column 6, lines 65-67, column 7, lines 29-65, column 8, lines

40-49, column 9, lines 17-26, 31-67, column 10, lines 1-6, 8-13). Therefore it would have been obvious to one of ordinary skill in the art to modify Klein as suggested by Madhow in order to implement interference suppression adaptively (Madhow, column 2, lines 51-55) and improve the interference cancellation process (see column 2, lines 56-57).

As to claim 2, Klein further discloses that the receiver comprising a searcher finger (see Fig. 4, block 60) configured for selecting signals for demodulation from the plurality of signals and for determining one or more codes from selected signals (see Fig. 6, paragraphs 0002, 0039, and 0043).

As to claim 3, Klein discloses that the demodulator unit comprises a plurality of demodulator fingers configured for demodulating the selected signals (see paragraph 0039).

As to claim 4, Klein further discloses that the determined codes comprise code offsets in time from one another (See paragraph 0002).

As to claims 5, 19, and 27, Madhow further discloses that the matrix comprises one composite interference vector having one or more elements, wherein each element of the vector includes a component of a determined code and a relative amplitude of one of the signals associated with the determined code (columns 6-9). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Klein as suggested by Madhow to suppress the interference more effectively.

As to claim 6, Madhow further discloses each vector of the matrix has one or more elements, each element comprising a component of a determined code associated with one of the plurality of signals (see columns 6-9).

As to claim 7, Madhow further discloses that a radio frequency front end configured for receiving the signals (column 4, lines 26-31). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Klein as suggested by Madhow, in order to process the signal (e.g. down-convert it to baseband) before sending it to the other part of the receiver.

As to claim 8, Madhow further discloses in (Fig. 4 (402,404)) wherein the processing engine comprises a channel selector configured for selecting components of the determined codes from signals selected for energy reduction (column 7, lines 29-49, column 8, lines 40-60). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Klein as suggested by Madhow to suppress the interference more effectively.

As to claims 9, 21, and 29, Madhow further discloses that the processing engine is further configured to generate, a cancellation operator used to substantially reduce the energy of the signals selected for energy reduction (column 7, lines 6-33, column 8, lines 40-60, column 10, lines 3-12). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Klein as suggested by Madhow to suppress the interference more effectively.

As to claims 17 and 25, Klein further discloses demodulating one or more signals from the plurality of signals (see paragraphs 0005 and 0039).

As to claims 18 and 26, Klein further discloses determining one or more codes for signals selected from the plurality of signals (see paragraph 0002).

As to claims 20 and 28, Madhow further discloses constructing the matrix from a plurality of the vectors, wherein each vector of the matrix has one or more elements, each element comprising a component of a determined code associated with one of the plurality of signals (see column 8, lines 40-54, column 9, lines 17-24). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Klein as suggested by Madhow to suppress the interference more effectively.

4. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klein and Madhow, further in view of Applicant's background of invention.

As to claim 12, Klein and Madhow disclose all the limitations claimed in claim 12, except that the determined codes are selected from a group consisting of a combination of a spreading code and a converging code. Applicant in the background of invention discloses that the codes are selected from a group consisting of a combination of a spreading code and a converging code (see pages 2-3). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Klein and Madhow as suggested by Applicant's background of invention to reduce the interference between the signals received at the receiver (see pages 2-3).

As to claim 13, Applicant in the background of invention further discloses that the spreading code is a short code (see page 2). It would have been obvious to one of ordinary skill in the art at the time of invention to use a short codes to encode signals before transmission to reduce the interference between the signals transmitted from different base stations (see page 2).

As to claim 14, Applicant in the background of invention further discloses that the covering code is selected from a group consisting of a Walsh code and a quasi-orthogonal function code (see page 2, last paragraph). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Klein and Madhow as suggested by Applicant's background of invention to reduce the interference between the signals received at the receiver (see pages 2-3).

As to claim 15, Applicant in the background of invention further discloses that the signals are selected from a group consisting of cdma2000 signals and cdmaOne signals (see page 2). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Klein and Madhow as suggested by Applicant's background of invention to take advantage of higher data rates in the system.

Allowable Subject Matter

5. Claims 10, 11, 22, 23, 30, and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leila Malek whose telephone number is 571-272-8731. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leila Malek
Examiner
Art Unit 2611

L.M.


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER